IN THE CLAIMS:

1. (Currently Amended) A method for ~~modification of~~ eliminating silicon islands and pinholes in a buried oxide layer of an SOI material containing a top single crystal silicon layer having a major surface, ~~a~~ the buried oxide layer, and a substrate for eliminating silicon islands and pinholes in the buried oxide layer, the SOI material having been formed using a SIMOX method by implanting a large dose of oxygen ion into a single crystal silicon wafer and annealing at a temperature of 1300°C to below the melting point of the single crystal silicon layer to form the top single crystal silicon layer and the buried oxide layer, the method comprising the steps of:

(1) implanting silicon ion, germanium ion, inert gas ion or oxygen ion at a dose and an energy into SOI material containing the top single crystal silicon layer and the buried oxide layer at a temperature below 100°C, to form an amorphous region including said buried oxide layer and to keep an original structure in vicinity of said major surface; and

(2) annealing aforesaid SOI material at a temperature in the range from 900°C to 1250°C to ~~restore structure of the top silicon layer and the substrate and to~~ eliminate silicon islands and pinholes in said buried oxide layer.

2. (Currently Amended) The method of claim 1, wherein the ~~said~~ energy is in the range from 30keV to 5MeV.

3. (Currently Amended) The method of claim 1, wherein the ~~said~~ dose for implanting silicon ion, germanium ion, inert gas ion or oxygen ion is in the range from 1×10^{13} cm^{-2} to 5×10^{16} cm^{-2}.

4. (New) A method for eliminating silicon islands and pinholes in a buried oxide layer of an SOI material comprising the steps of:

implanting a large dose of oxygen ion into a single crystal silicon wafer and annealing at a temperature of 1300°C or greater to form an SOI material comprising a top single crystal silicon layer having a major surface and a buried oxide layer having silicon islands and pinholes;

implanting silicon ion, germanium ion, inert gas ion or oxygen ion at a dose and

an energy into SOI material at a temperature below 100°C to form an amorphous region including said buried oxide layer and to keep an original structure in vicinity of said major surface; and

annealing the implanted SOI material at a temperature in the range from 900°C to 1250°C to eliminate the silicon islands and pinholes in the buried oxide layer.

5. (New) The method of claim 4, wherein the energy is in the range from 30keV to 5MeV.

6. (New) The method of claim 4, wherein the dose for implanting silicon ion, germanium ion, inert gas ion or oxygen ion is in the range from 1×10^{13} cm^{-2} to 5×10^{16} cm^{-2}.

7. (New) The method of claim 4, wherein the method is conducted to provide the top single crystal silicon layer with a thickness of about 100 nm to about 200 nm.

8. (New) The method of claim 4, wherein the large oxygen dose is from 1.2×10^{18} cm^{-2} to 1.8×10^{18} cm^{-2}.

9. (New) The method of claim 4, wherein the large oxygen dose has an implantation energy of from 150 keV to 200 keV.

10. (New) The method of claim 4, wherein during the large oxygen dose, the silicon wafer is heated from 450°C to 700°C.

11. (New) The method of claim 4, wherein the implanted silicon wafer is annealed at a temperature of 1300°C to less than the melting temperature of the single crystal silicon.